

THE AUSTRALIAN SPECIES OF *AULACOPHORA*  
(COLEOPTERA, CHRYSOMELIDÆ).

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*(Contribution from the South Australian Museum.)*

THE genus *Aulacophora* is abundantly represented in the Malay Archipelago, New Guinea, the warmer parts of Australia and elsewhere. Many of the species are widely distributed and variable; on the other hand, some at first glance appear to be closely allied or identical with others from which they may be readily distinguished by male characters of the antennæ and abdomen.

Baly in 1886<sup>1</sup> gave a table of most of the then-known species, with notes and descriptions, supplementing these in 1888<sup>2</sup>.

Allard in 1888<sup>3</sup> gave tables of the genera and species of the Aulacophorites, with a list of the species, many synonyms being noted.

Baly in 1889<sup>4</sup> in criticising Allard's paper remarked: "This paper bears marks of hasty compilation and of insufficient study of the various specific forms; numerous errors have consequently crept in." He gave many instances of these.

As some of the species are very destructive, it appears desirable to comment upon each of those recorded for Australia, some undoubtedly in error. With one exception all the Australian species occur in Queensland, but of these several extend to other States and a few to New Guinea and elsewhere.

**A. abdominalis** Fabr. Baly<sup>5</sup> was the first to record this species as Australian. In Gemminger and Harold's catalogue the species is recorded from Europe, Africa, and Asia, and seven synonyms are noted. In Allard's catalogue *A. excisa* of Baly is added, and it is also recorded from New Zealand, &c. Baly considered Allard's identifications erroneous. Blackburn stated of *A. palmerstoni*: "Mr. Jacoby informs me that this is not distinct from *A. abdominalis* Fabr."<sup>6</sup> There are specimens of the species in the South Australian Museum from Queensland, Northern Territory, North-western Australia, and Aru; it differs from *A. wilsoni* by the transverse impression of pronotum undulated in middle, the scutellum pale, and more of the under-surface and legs pale, but the dark parts of the legs and abdomen vary in extent and degree.

<sup>1</sup> Baly, Journ. Linn. Soc., Zool., xx, pp. 1-26.

<sup>2</sup> Baly, *loc. cit.*, pp. 175-185.

<sup>3</sup> Allard, Ann. Soc. Ent. Fr., pp. 305-332.

<sup>4</sup> Baly, Trans. Ent. Soc., pp. 297-307.

<sup>5</sup> Baly, *loc. cit.*, 1886, p. 14.

<sup>6</sup> Blackburn, Trans. Roy. Soc. S. Aust., 1893, p. 233.

**A. affinis** Montr. This species was originally recorded from New Caledonia, and the elytra were described as reddish, with two black bands, one at the base the other at the apex. Allard considered that *A. deplanchei* and *A. approximata* were synonyms, but Baly denied this. The species probably occurs neither in Australia nor New Guinea. Jacoby in commenting on it<sup>7</sup> described some specimens from Somerset which he thought possibly belonged to the species, but which differed from the description in having the tips of the elytra pale, and the pygidium black. The species he identified was also standing in the Blackburn collection so named, and there are several close in appearance to it, but readily distinguished by the abdomen of the male.

**A. analis** Weber. Baly in commenting on the genus said<sup>8</sup>: "The first six species here described have simple antennæ in both sexes," *A. analis* being described as No. 1. Presuming Baly's identification to be correct, the species has no connection with *A. hilaris*, as identified in Australia, whose antennæ are not simple in the male. Moreover the nearest locality to Australia that he gives for the species is Celebes, so that it probably does not even occur in Australia. Allard's record of it from Adelaide was, no doubt, based upon *A. hilaris*.

**A. armigera** Baly. Described from a single female from Murray Island, a small island slightly more than one hundred miles east of Thursday Island. Four females from Roper River (Northern Territory), and one from St. Joseph's River (New Guinea) possibly belong to the species. The former appear like small ones of *A. abdominalis*, but have the pygidium ridged towards apex, with the apex itself produced as a small tooth of varying sharpness; one or two apical segments of the abdomen are more or less flavous, but only parts of the tibiæ and tarsi are infuscated, the femora being entirely pale. The one from New Guinea has the pygidium almost equilaterally triangular, with the tip produced as a short pointed process; its hind legs are black, middle ones not much paler, but front ones with only the tibiæ and tarsi slightly infuscated; the apical segment of its abdomen is semicircularly notched.

**A. australis** Blackb. After its description Blackburn incorrectly noted this name as a variety of *A. analis*, but later correctly as a synonym of *A. olivieri*.

**A. borrei** Baly. Proposed by Baly<sup>9</sup> as a substitute for *A. pectoralis* Jac.

**A. cartereti** Guer. Recorded as from Carteret Harbour, New Holland, but really in the Solomons; so that the name should be expunged from Australian lists. Allard recorded it from New Holland with *A. instabilis* of Baly as a synonym; Baly denied the synonymy, but recorded the species from New Guinea. A female from the Madang district of New Guinea possibly belongs to the species. Its legs are entirely pale and under-surface pale except

<sup>7</sup> Jacoby, Ann. Mus. Civ. Gen., 1886, p. 57.

<sup>8</sup> Baly, loc. cit., 1888, p. 175.

<sup>9</sup> Baly, loc. cit., 1889, p. 303.

that part of the abdomen is infuscated, but the upper surface of its pygidium is black. It is certainly close to some forms of *A. instabilis*, of which there are many specimens in the South Australian Museum from New Guinea.

**A. cucullata** Blackb. The only known species from Australia with the base only of the elytra black; the male (unknown to Blackburn) has simple antennæ, but the apical segment of its abdomen has a wide notch extending almost to its base.

**A. cyanura** Hope. The original description is "*Testacea, capite thoraceque maculatis elytrisque apicibus cyaneis*." Length  $4\frac{1}{2} \times 2\frac{1}{4}$  lines. It is not referred to by Baly in the papers quoted, and Gemminger and Harold record it from Assam. The species, if it is really an *Aulacophora* (it was described as an *Auchenia*) probably does not occur in Australia. Allard states that it is a synonym of *Phyllobrotica lunata* Redt., an Asiatic species.

**A. denticornis** Blackb. Although Blackburn described the dark parts of the elytra as "rubropurpureis" and again as "purplish red," on a female (marked as a cotype) the elytral markings are almost black. On four specimens two of each sex, from Cairns, the markings are quite black. The abdomen of the male is somewhat as on the male of *A. hilaris*, but the part between the notches is wider, and the notches are narrower, although of about the same depth. Both sexes may be distinguished from those of *A. hilaris* by the apex of elytra being widely black, instead of just tipped with blackish.

**A. duboulayi** Baly. I have seen no specimens of this species, but the brassy-green elytra and male with the third to fifth joints of antennæ dilated should render it easy of recognition.

**A. fallax** Weise. Five specimens from the Cairns district appear to belong to this species; they have the general appearance of *A. borrei*, and the males have a similar trough-like abdominal cavity; but are distinguished by the tarsi and antennæ. On this species the basal joint of the front tarsi scarcely differs sexually—on that one the basal joint of the male is almost twice as large as that of the female. The antennæ are also conspicuously longer and thinner than those of *A. borrei*, and are pale throughout. On four specimens the labrum is entirely black, on one of the males it is infuscated only at the apex; the pale median fascia of the elytra is slightly larger than the black ones, but appears to have decidedly larger punctures. This, however, is due to "water-logging." The pale apical portion is not half the length of the fascia before it, and is narrowly continued around the sides. The black fasciæ are sometimes narrowly interrupted at the suture.

**A. hilaris** Boi. The original description is: "*Lutea, utrinque nigro bicincta*"; with a translation into French, the locality being noted as New Holland. Short as the description is it applies exactly only to the species subsequently named *A. olivieri* by Baly and *A. australis* by Blackburn. It has been (correctly, I think) applied to our most destructive species of the genus, with two large black spots on each elytron and the male with the third to fifth joints of

antennæ dilated and the following ones infuscated. The apical segment of its abdomen has a deep and not-very-narrow notch, extending on each side of the middle to near the base, the part between the notches shallowly depressed and the depression continued to the base itself. The basal spots on the elytra are narrowly separated at the suture, and the postmedian ones rather more widely there; the tip is also narrowly blackish. Allard, without giving evidence for his identifications, noted *A. nigrosignata* Baly, *A. pectoralis* Jac., and *A. insularis* Jac. as synonyms or probable synonyms; but Baly disagreed, apparently on good grounds, although he believed the type to be lost.

**A. melanura** Oliv. Recorded by Olivier from New Holland, by Boisduval from New Guinea, and by Allard from Borneo. It is described as a pale species with the elytra black except for parts of the lateral margins. It probably does not occur in Australia, or at least needs confirmation before being included in our lists.

**A. nigrivestis** Boi. Recorded by Boisduval as from New Holland. Baly in describing *A. lewisi*<sup>10</sup> from China said it was possibly described from the female of *A. nigrivestis*. Subsequently<sup>11</sup> he extended the range of the species to India and the Malay Archipelago, but without again mentioning *A. nigrivestis*. Allard recorded *A. nigrivestis* from New Guinea, noting *A. lewisi* as a synonym. There are five specimens, from the Madang district of New Guinea, that appear to belong to the species. The elytra and abdomen are black in all of them. On two the metasternum is also black; on the others it is pale. The extent of infuscation of the hind legs varies. Its right to a position in Australian catalogues needs confirmation.

**A. occipitalis** Baly.<sup>12</sup> Blackburn of this species wrote<sup>13</sup>: "I have an example taken near Port Darwin which is quite identical with specimens of this species from New Guinea." In his collection there were two specimens, from Darwin and Cairns, standing as *A. occipitalis* and another from St. Joseph's River, New Guinea; the Darwin and New Guinea specimens are males, and agree with Baly's description of the abdomen, but their antennæ are very different from his description, the third to fifth joints being only slightly thicker than those of the female, instead of much wider and conspicuously and acutely produced on one side of apex. Numerous specimens from the Madang district of New Guinea agree perfectly with Baly's description, but the species occurs also at Somerset and Thursday Island. The species identified by Blackburn as *A. occipitalis* is here named *A. tetrastictoptera*.

**A. olivieri** Baly. The description of *A. olivieri* agrees perfectly with the species here regarded as *A. hilaris*.

**A. palmerstoni** Blackb. A synonym of *A. abdominalis*.

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<sup>10</sup> Baly, *loc. cit.*, 1886, p. 24.

<sup>11</sup> Baly, *loc. cit.*, 1888, p. 179.

<sup>12</sup> Baly, *loc. cit.*, p. 184.

<sup>13</sup> Blackburn, Trans. Roy. Soc. S. Aust., 1892, p. 237.

**A. pectoralis** Jac. As *A. pectoralis* was previously used by Chapuis. Baly altered Jacoby's name to *A. borrei*.

**A. punctata** Boi. The description of this species, "*Rubro lutea, tenuissime punctata, pectore pedibusque nigris*," may have been founded upon one of the varieties of *A. abdominalis*.

**A. relictæ** Boi. The description of this species reads as if founded upon *A. abdominalis*, some specimens of which have only the hind legs partly dark. Allard noted that *A. duvivieri* was a synonym of the species, which Baly, apparently with good reason, denied.

**A. richmondensis** Blackb. Allied to *A. hilaris*, but dark elytral markings not interrupted at the suture, the tips not dark, and abdomen entirely pale, and in the male with a deep median excavation. Although Blackburn wrote: "The antennæ are not different in the sexes," those of the male are slightly stouter than those of the female. Of the five specimens before me four have the metasternum black or blackish: on the other it is as pale as the abdomen. Blackburn considered it was distinct from *A. pectoralis* Jacoby (now *A. borrei* Baly) because Jacoby used the expression "the prothorax impunctate"; I believe it to be that species, however, because the prothorax from some directions appears almost impunctate, and Jacoby frequently noted species as having parts impunctate when small punctures are really present. Weise records the species from several fresh localities in Queensland under the following heading:—(CERATIA (ORTHAULACA) BORREI Baly (*pectoralis* Jac., *richmondensis* Blackb.)).<sup>14</sup>

**A. scutellata** Boi. Allard considered this species was identical with *A. palustris* Perr. (which Baly states is a *Monolepta*) and *A. wallacei* Baly. It was reported from the Pacific Ocean by Boisduval, by Gemminger and Harold from Australia, and by Allard from Moreton Bay (no doubt Moreton Bay being intended). If really Australian the description "*Lutea, scutello nigro, abdomine pectoreque nigro-fuscis*" may well have been founded upon *A. wilsoni*, which occurs near Brisbane, as well as in New South Wales.

**A. serena** Weise. Referred by Weise to the subgenus *Orthaulaca* of *Ceratia*; the structure of its antennæ was not described, but they are apparently somewhat as in *A. hilaris*, from which, as from *A. tetrastictoptera*, the species should be distinct by its entirely pale abdomen, except for a spot on the pygidium.

**A. wilsoni** Baly. In general appearance like small *A. abdominalis*, but with the scutellum dark.

<sup>14</sup> Weise, Arkiv för Zool., Stockholm, Band 15, No. 12, 1923, p. 86.

TABLE OF AUSTRALIAN SPECIES OF *AULACOPHORA*.A<sup>1</sup>. Elytra entirely pale.

a <sup>1</sup> . Scutellum dark	..	..	..	..	..	..	..	<i>wilsoni</i> Baly.
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a<sup>2</sup>. Scutellum pale.

b <sup>1</sup> . Pygidium acutely pointed	..	..	..	..	..	..	..	<i>armigera</i> Baly.
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b <sup>2</sup> . Pygidium less-acutely pointed	..	..	..	..	..	..	..	<i>abdominalis</i> Fab.
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A <sup>2</sup> . Elytra dark only at base	..	..	..	..	..	..	..	<i>cucullata</i> Blackb.
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A<sup>3</sup>. Elytra with two black fasciæ or four large black spots.B<sup>1</sup>. Antennæ of male with third to fifth joints wide and produced to one side

c <sup>1</sup> . Head with a large black spot on each side of base	..	..	..	..	..	..	..	<i>occipitalis</i> Baly.
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c<sup>2</sup>. Head immaculate.

d <sup>1</sup> . Apical third of elytra black	..	..	..	..	..	..	..	<i>denticornis</i> Blackb.
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d <sup>2</sup> . Apical third pale (the tip excepted)	..	..	..	..	..	..	..	<i>hilaris</i> Boi.
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B<sup>2</sup>. Antennæ simple in both sexes.

C <sup>1</sup> . Head with a large black spot on each side of base	..	..	..	..	..	..	..	<i>tetrastictoptera</i> Lea.
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C<sup>2</sup>. Head immaculate.

D <sup>1</sup> . Pygidium black	..	..	..	..	..	..	..	<i>apiciventrìs</i> Lea.
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D<sup>2</sup>. Pygidium pale.

E <sup>1</sup> . Apical segment of abdomen of male with space between notches transverse	..	..	..	..	..	..	..	<i>medioflava</i> Lea
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E <sup>2</sup> . Apical segment of male with two deep notches, the space between with a trough-like cavity almost to base	..	..	..	..	..	..	..	
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F <sup>1</sup> . Basal joint of front tarsi of male almost twice as wide as that of female, part of antennæ black	..	..	..	..	..	..	..	<i>borrei</i> Baly.
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F <sup>2</sup> . Basal joint similar in sexes, antennæ longer and thinner than in <i>A. borrei</i> , and entirely pale	..	..	..	..	..	..	..	<i>fallax</i> Weise.
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Names not noted in above Table.

*palmerstoni* Blackb., *punctata* Boi., *relicta* Boi. (= *abdominalis* Fab.).

*pectoralis* Jac., *richmondensis* Blackb. (= *borrei* Baly).

*australis* Blackb., *olivieri* Baly (= *hilaris* Boi.).

*scutellata* Boi. (? = *wilsoni* Baly).

*affinis* Montr., *analís* Weber, *cartereti* Guer., *cyanura* Hope, *melanura* Oliv. (not Australian).

*duboulayi* Baly. Not tabled, as unknown to me; a new section "A<sup>4</sup>. Elytra entirely dark" would be required for it, to which *A. nigrivestis* Boi., if really Australian, could be added.

*serena* Weise. Not tabled, as unknown to me; it should probably be associated with *A. hilaris*.

**AULACOPHORA TETRASTICTOPTERA** sp. nov.

♂ Flavous; each side of base of head, four large spots on elytra, metasternum and much of abdomen black.

Head with a median line becoming foveate where it traverses the interocular groove. Antennæ scarcely passing the hind coxæ and fairly stout but simple. Prothorax with transverse impression deep and almost straight; with



dense and small punctures, larger about front angles than elsewhere. Elytra not transversely impressed near base, sides somewhat dilated from near base, punctures rather small but sharply defined. Apical segment of abdomen large, with a deep trough-like median cavity, bordered on each side, but not to its base, by a narrow groove. Length, 5.6-5 mm.

♀ Differs in having somewhat thinner antennæ, apical segment of abdomen smaller and simple, and its apex not notched.

*Hab.*—Northern Territory (Blackburn's collection), Darwin (W. K. Hunt), Roper River (N. B. Tindale); Queensland: Cairns district (Blackburn's collection and E. Allen); New Guinea: St. Joseph's River (Sir Wm. MacGregor). Type, I. 4068 in South Australian Museum; cotype, C.2751, in Queensland Museum.

In general appearance strikingly like *A. hilaris* and *A. occipitalis*, but at once distinguished by the simple antennæ of the male. On each of those species the third to fifth joints of the male are strongly dilated and produced to one side. The two large spots on each elytron are basal and postmedian, somewhat rounded and touch neither suture nor side; the tips are no darker than the adjacent surface but have a curious watery appearance. The basal segment of abdomen and parts of the second, and in the male the trough-like cavity are more or less flavous. The pygidium is black but normally concealed. On the elytra of some specimens the punctures, although really rather small, appear large, but this is due to "waterlogging."

#### AULACOPHORA MEDIOFLAVA sp. nov.

♂ Bright orange-flavous, median fascia of elytra paler; labrum, two wide elytral fasciæ and legs, except coxæ and knees, black; antennæ more or less deeply infuscated, some of the basal joints paler.

Head with a subfoveate expansion in middle of interocular groove. Antennæ long, thin, and simple. Prothorax with transverse impression wide and feebly curved; with small punctures, but becoming larger in all the angles. Elytra not transversely impressed near base; punctures small. Abdomen with a short incision on each side of apex, the space between them slightly depressed and about twice as wide as long. Length, 7.9 mm.

♀ Differs in being more robust, antennæ somewhat shorter, the apical segment of abdomen not incised and its tip gently rounded.

*Hab.*—Northern Queensland (Blackburn's collection), Cairns district (E. Allen, G. E. Bryant, and F. P. Dodd), South Johnstone River (H. W. Brown). Type, I. 4740, in South Australian Museum; cotype, C.2749, in Queensland Museum.

Larger than most of the Australian species and with the under-surface entirely pale. The abdominal incisions of the male are shorter than in the

allied species, and the space between them is but feebly concave. The basal fascia of the elytra occupies rather more than one-fourth of the surface, and is scarcely or not at all interrupted at the suture. The pale fascia is slightly longer, the following black one is about as long, and leaves a small apical portion pale (smaller and not incurved as on *A. borrei*), a narrower lateral portion, and usually the suture (very narrowly). The elytral punctures are really all small, but on some specimens, owing to "waterlogging," they appear of moderate size on the pale parts.

**AULACOPHORA APICIVENTRIS** sp. nov.

♂ Flavous; labrum, two wide elytral fasciæ, a spot on each side of apex of abdomen, pygidium and parts of legs black, most of antennæ infuscated.

Head with interocular groove narrow and curved, a small fovea in its middle. Antennæ long, thin and simple. Prothorax with transverse impression deep and slightly curved; punctures minute, but becoming of moderate size in front angles. Elytra moderately dilated posteriorly, not transversely depressed near base; punctures minute but rather sharply defined. Apical segment of abdomen rather large, a deep cavity commencing rather narrowly at base and dilated to apex, a narrow incision on each side of its apical two-thirds. Length, 6-8 mm.

♀ Differs in being somewhat more robust, antennæ somewhat shorter and less infuscated, apical segment of abdomen simple, its tip rounded, and the black part not interrupted in middle.

*Hab.*—Northern Queensland (Blackburn's collection), Cairns district (E. Allen and J. A. Anderson), Bowen (Aug. Simson). Type, I. 15645 in South Australian Museum; cotype, C.2750, in Queensland Museum.

The type was standing in the Blackburn Collection as *A. affinis*, apparently owing to Blackburn's acceptance of Jacoby's surmise; but *A. affinis* probably does not even occur in Australia, and in any case there are too many discrepancies from Montrouzier's description for this species to be treated as such. Except for a very small apical portion the elytra are divided into three zones of about equal extent, a flavous median one and two black ones. The hind legs are blackish except that the coxæ and knees are pale; the other legs have the femora entirely pale. The infuscation of the antennæ is not very deep; on one female the three median segments of abdomen are partly infuscated.